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ABSTRACT

In an examination of the implementation of educational change, a discussion is presented on the purpose, meaning, and context of change. Consideration is given to the value of change, its benefits and feasibility, and the capacity for implementation. In the second section of the paper, 14 factors related to the implementation of change in schools are summarized, and corresponding research on these factors is cited. In discussing the characteristics of the change itself, the factors of need, clarity, complexity, quality, and practicality are examined. Six factors influencing the characteristics of change at the school district level are discussed: (1) the district's history of innovative attempts; (2) the adoption process; (3) district administrative support; (4) staff development and participation; (5) time-line and information systems; and (6) community characteristics. In discussing the school level factors relating to change, the role of the principal, teacher-teacher relationships, and teacher characteristics and orientations are singled out as factors for consideration. The last set of factors are considered under the label of assistance external to the school district. Six types of outcomes of change are identified: (1) degree of organizational change; (2) scope of implementation; (3) incorporation of the product; (4) incorporation of a problem-solving process; (5) problem resolution; and (6) personal impacts. The final section of the paper addresses implications, unresolved issues, and the question of deriving practical lessons for integrating the theory and practice of educational change. (JD)

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IMPLEMENTING EDUCATIONAL CHANGE:

PROGRESS AT LAST

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Over a decade ago, a trilogy of studies on implementation - Gross (1971), Sarason (1971) and Smith and Keith (1971) - all well done and provocative, launched a new wave of interest and research on the problem of educational change. They were studies of the failure of educational change in practice. As insightful as these studies were they were only of inchoate value. We found out during the 1970's that there were many different ways to fail, and being able to explain failure was not of direct help in being able to understand, let alone influence success. In 1982 I believe we can honestly say that we can understand success, and even help bring it about under certain conditions (the latter of course being a significant qualifier).

I propose to examine the question of implementation under three headings: First, a consideration of the purpose, meaning and context of change; the second and core aspect summarizes findings from implementation research per se; the final section of the paper addresses implications, unresolved issues, and the question of deriving practical lessons for integrating the theory and practice of educational change.

I THE PURPOSE, MEANING AND CONTEXT OF CHANGE

There are three fundamental points to be made at the outset pertaining respectively to purpose, meaning and context. First, in theory, the purpose of educational change is to help schools accomplish their goals more effectively by replacing some programs or practices with better ones. However, in actual practice it is not at all clear what is better, and for whom. We cannot assume that any given change is worthwhile and should be implemented. In examining this matter we should keep in mind two central questions: Who benefits from the change (the values question)? And, How sound or feasible is the idea and the program or approach (the capacity for implementation question)? Both are complex and difficult questions to answer. To highlight the problem consider figure 1.

Figure 1 Types of Implementation Outcomes of Adopted changes

Value and technical quality of the change	Actual Implementation: Yes	Actual Implementation: No
Yes	I	II
No	III	IV

(From Fullan, 1982:14)

"Actual implementation" refers to whether or not there has been real change in practice. "Value and technical quality" collapse the two factors related to who benefits and whether or not the program

has been technically well developed.*

Type I in figure 1 represents what we are presumably striving for: actual implementation of a quality program which we value. Type II reflects a planning problem in that a worthwhile program for whatever reasons is not working. We do not often conceive of Types III and IV. In the former situation a change which is not well developed and/or valued is being put into practice. In short a bad change is being introduced. Type IV, interestingly, is a form of success in that a poorly valued or poorly developed change is being rejected in practice. In any case, the point is that whether a particular potential change program or direction is desirable is an open question to be determined by the variety of people most affected.

The second main point is that change happens to individuals. Every change has two components: an implicit or explicit "theory of education" (what the change is) and an implicit or explicit "theory of change" (the process being followed to implement it). Individuals must find meaning in both aspects, if change is to succeed. No matter who decides on the direction of change - teachers, administrators, external developers or policy-makers the meaning of change in terms of acceptance, rejection, and modification must be confronted and worked through. I leave open the question of whether change is initiated internal or external to a school or a

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*The two factors of who benefits and technical quality must be separated in any further analysis, and are combined here for the sake of simplicity in making the main point.

school district. The fact is that changes come from both internal and external sources, and must be assessed on their particular merits from each individual's or group's perspective. Neither internal or external change is intrinsically good or bad.

The third basic issue is that educational change is context bound. The history, personalities, and socio-political climate within each setting constitute major determinants of change outcomes. There are a number of common factors related to success and failure, but in any individual situation both common and unique knowledge is necessary (see Lindblom and Cohen, 1979).

The message in the rest of this paper is twofold: (1) don't launch headlong into something without first checking out many factors known to affect the chances for success, and (2) don't be afraid to try something new armed with the knowledge garnered from the research and practice of educational change over the past decade. Let us now turn to what research on implementation has to tell us.

II IMPLEMENTATION RESEARCH

Implementation consists of the process of putting into practice (or failing to do so) an idea, program or set of activities new to the people attempting or expected to change. It may be externally imposed or voluntarily sought, explicitly defined in detail in advance, or developed and adapted incrementally through use, designed to be used uniformly, or deliberately planned so that users can specify it according to their perceptions of the needs of the situation. We can divide implementation into two broad components: factors affecting implementation, and implementation outcomes — the latter being referred to increasingly under the rubric of school improvement. I will return to and elaborate on the concept of implementation outcomes in the latter part of this section, but let me suggest for starters that one major type of outcome is "change in practice."* I tend to view change in practice as being multidimensional consisting of at least three related aspects (1) changes in the use of new resources in the classroom (curriculum materials, new technology etc.); (2) change in classroom behavior (e.g., new skills and teaching behaviors in relation to the change); and (3) alterations in beliefs, theories or assumptions associated with the change. Implementation is so difficult because it involves

*For the sake of simplicity I will focus on changes in classroom practice.

potential changes in what people do (using new resources and new teaching approaches) and in what they think (altering one's beliefs and educational theories).* Most directly then, the question of implementation is one which asks: which factors affect the likelihood that there will be changes in what people do and think in relation to their educational practices. In the rest of this section I will first take up the topic of what we know about factors affecting implementation, and second, conclude with a discussion of implementation outcomes.

Factors Affecting Implementation

Although the process of implementation is complex in any given situation and there are many different specific variables, permutations and combinations, it is possible to summarize in a relatively comprehensive way the main factors. This involves some abstraction, and there are different ways of organizing the clusters of variables involved. However, much of the research over the past ten years (and increasingly so) is consistent in identifying a number of factors related to change in practice. Table 1 contains a list of these factors as I have organized them (for a slightly different but congruent summary see Berman, 1981). In effect, table 1 suggests that change in practice is a function

*In a more complete treatment of the topic, I define the problem of educational changes as the problem of meaning - of the difficulties and conditions under which individuals can come to understand the why and how of doing something new (See Fullan, 1982).

TABLE 1

FACTORS AFFECTING IMPLEMENTATION

A. CHARACTERISTICS OF THE CHANGE

1. Need
2. Clarity
3. Complexity
4. Quality and practicality

B. CHARACTERISTICS AT THE SCHOOL DISTRICT LEVEL

5. The district's history of innovative attempts
6. The adoption process
7. District administrative support
8. Staff development and participation
9. Time-line and Information Systems
10. Community characteristics

C. SCHOOL LEVEL FACTORS

11. The role of the principal
12. Teacher-teacher relationships
13. Teacher characteristics and orientations

D. EXTERNAL FACTORS

14. External assistance

of four types of characteristics pertaining to: A. The Change being attempted, B. The School District, C. The School Level, and D. External Assistance. It will only be possible in this paper to summarize briefly the nature of the 14 factors and corresponding research.*

A. Characteristics of the Change

1. Need

Many innovations are attempted without a careful examination of whether they address particular priority needs. Teachers for example, frequently do not see the need for a change that is being advocated. Several large scale studies confirm the importance of relating need to decisions about innovations or change directions. In the Experimental Schools (ES) project Rosenblum and Louis (1979:12) found that "the degree to which there was a formal recognition within the school system of unmet needs" was one of the four "readiness factors" which was associated with subsequent implementation. The Rand Change Agent Study (FPSEC) identified problem solving decision-making (i.e., identification of a need linked to selection of a program) as strongly related to successful

*The following discussion is somewhat cryptic due to limitations of space. Each of the factors should be discussed at more length because there are many qualifiers and nuances involved.

implementation (Berman and McLaughlin, 1978). The RDU project reports that perceived relevance of products is correlated significantly with extent of implementation (Louis and Rosenblum, 1981). Other studies have discovered that implementation is more effective when relatively focussed or specific needs are identified. (e.g., Emrick and Peterson, 1978, Louis and Sieber, 1979). Of course, the problem is that need may not be evident at the beginning of the change process, but may be created as people get more familiar with a particular change (see especially the case studies in Crandall et al's forthcoming research on Dissemination Efforts Supporting School Improvement (DESSI).

2. Clarity

Clarity (about goals and means) is a perennial problem in the change process. Even when there is a potential need, as when teachers want to improve some area of the curriculum, the change may be not at all clear about what they should do differently.* Gross et al (1971) found that the majority of teachers were unable to identify the essential features of the innovation they were using. Problems related to clarity have been found in virtually every study

*The change, for instance, may not be sufficiently well developed to be "implementable".

of significant change (e.g., Aoki, et al, 1977, Charters and Pellegrin, 1973, Miles, 1978, Simms, 1978, Weatherley, 1979). In short, lack of clarity - diffuse goals and unspecified means of implementation - represents a major problem at the implementation stage at which time teachers and others find that the change is simply not very clear as to what it means in practice.

Clarity, of course, cannot be delivered on a platter. It is accomplished or not depending on the process.* Nor is greater clarity an end in itself. Very simple and significant changes can be very clear, while more difficult and worthwhile ones may not be amenable to easy clarification. This brings me directly to the third related factor - complexity.

3. Complexity

Complexity refers to the difficulty and extent of change which might be involved for individuals engaged in implementation. The actual amount depends on the starting point for any given individual or group, but the main idea is that any change can be examined in regard to the difficulty, skill required, and extent of alterations in beliefs, teaching strategies, and use of materials. Many

*The relationship to other factors in categories B and C is obvious. To take one example, staff development activities if appropriate, contribute to greater clarity.

changes such as open education (Bussis et al, 1976) systematic direct instruction (Gersten et al, 1981), inquiry oriented social studies (Aoki et al, 1977), special education (Weatherley, 1979), parent involvement (Fantini, 1980), etc., require a sophisticated array of activities, diagnosis, teaching strategies and philosophical understanding in order to achieve effective implementation.

While complexity creates problems for implementation, it may result in greater change because more is being attempted. Berman and McLaughlin (1977:88) found the interesting combination that "ambitious projects were less successful in absolute terms of the percent of project goals achieved, but they typically stimulated more teacher change than projects attempting less". Those changes which did occur were more thorough as a result of the extra effort which the project required or inspired. As Berman (1979) stated it elsewhere, "little ventured, nothing gained". In the DESSI study, Crandall et al (forthcoming) discovered that it was necessary to separate teachers attempting a major change from those attempting a minor change before discernible patterns of explanation could be found.* It is the case that simple changes are easier to

*Degree of change was defined in terms of the individual starting points of teachers. Thus using the same innovation some teachers faced major change, and others minor change depending on their starting points.

to carry out, but they may not make much of a difference. Relatively complex changes promise to accomplish more. Whether they do or not depends on the combination of factors discussed in this section.

4. Quality and Practicality

The last factor associated directly with the nature of change concerns the quality and practicality of materials, products (or whatever form the change comes in). The large scale evaluation of innovations adopted through the National Diffusion Network (NDN) speaks to the issue: "well articulated adoption materials, which... are complete, well organized, comprehensive and detailed", and address "how to" concerns are more effective at the implementation stage; at earlier phases, concise, overview materials are better (Emrick et al, 1977, Emrick and Peterson, 1978:73). The RDU (Louis and Rosenblum, 1981) and DESSI (Crandall et al forthcoming) studies also confirm that product quality is an important factor in relation to change in practice.*

The history and role of product or program quality is not straightforward. The rush for innovation in the earlier period of educational change (the 1960's) probably resulted

*I do not examine questions of measurement in this paper. Quality can be measured in terms of "perceived quality" by users, or through some system of external validation (e.g., Joint Dissemination Review Panel).

in insufficiently developed or poor quality changes (however needed the particular change directions might have been). There is also the more subtle, problem to which I have referred elsewhere as "the dilemma of explicitness" (Fullan and Pomfret, 1977:368-9). To make innovations highly explicit at the development stage may mean that they are inappropriate for the variety of settings faced by teachers. For many problems, the situational knowledge of teachers is essential to deciding on the specific form of change (see Connelly and Elbaz, 1980, Huberman, 1980, Roberts, 1980). On the other hand, to leave innovations general, results in great confusion about what to do in practice. One of the better resolutions is suggested by Berman (1980) in which he observes that some educational problems are amenable to programmatic (or explicit) solutions, while others require more complex, adaptive resolutions over time. Be that as it may, many innovative efforts have suffered from the lack of high quality, practical, usable resources. One of the more fascinating implications of this observation is to consider whether relatively unstructured innovations (e.g., open education) have failed because they have eschewed the cumulative development of practical, specific resources at the operational level. Bereiter and Kurland (1981) criticize the more unstructured educational proponents exactly on these grounds.

B. Characteristics at the School District Level*

The settings in which people work - the planned and unplanned events and activities - influence whether or not given change attempts will be productive. The local school system represents one major set of situational constraints or opportunities for effective educational change. The same program is often successful in one school system, and on unmitigated disaster in another. I have distilled a substantial amount of evidence about what makes school systems effective into six factors: the history of innovative attempts, the adoption process (if the change involves a district decision), central administrative support and involvement, staff development approaches, the time-line and information system, and board/community characteristics.

5. The district's history of innovative attempts

Most attempts at collective change in education seem to fail, (with some recent exceptions) and failure means frustration, wasted time, feelings of incompetence and lack of support, and disillusionment. The importance of the district's history of innovation attempts can be stated in the form of a proposition: the more that teachers or others have had negative experiences with

*I do not consider every conceivable district factor. For example, the growing trend to more formal teacher/school board relationships (management/union contracts) could be examined, but the issue is too broad, and insufficiently researched to warrant any generalizations about its impact on change. I have confined the list of factors to those known to have an influence on implementation. Factor 5 - the district's history - of course, pertains to the political climate for change among the various groups.

previous implementation attempts in the district or elsewhere, the more cynical or apathetic they will be about the next change which is presented regardless of the merit of the new idea or program (see Sarason, 1971: 219-22). Districts can develop an incapacity for change as well as a capacity for it (see Berman, McLaughlin et al's 1978 study of a district in a process of "decay").

6. The adoption process

The adoption process (or decisions taken individually or collectively to attempt certain changes or new directions) in an important process in its own right (see especially Crandall et al, forthcoming). Its relationship to implementation or change in practice is unclear. The Rand FPSEC research indicated that opportunistic and bureaucratically oriented adoption decisions are followed by limited implementation (Berman and McLaughlin, 1978). As a result of this adoption process, subordinates become indifferent to implementation, and senior management does not make serious, follow through attempts to provide resources, training, etc. On the other hand, if the decision to change has been carefully considered with appropriate commitment and follow through by the district, it is much more likely to be taken seriously by principals or teachers. Berman, McLaughlin et al's (1978) study of five school districts provide the clearest illustrations of how opportunities and problem solving districts differ

in their day to day implementation of follow up activities (see also Miles', 1978), five case studies).

The role of teachers in adoption decisions is particularly complicated as figure two implies.

Figure 2 Teacher Participation in Adoption Decisions and Scope of Change

Teacher Participation in Initial Decision	Scope of Changes: Large	Scope of Changes: Small
Yes	I	II
No	III	IV

For example, even when teacher representatives are involved in program decisions (or development) about large scale change (situation I), it does not necessarily help other teachers when it comes to knowledge or commitment in implementing new ideas. Further, even when teachers are not involved in such initial decisions (situation III), implementation may succeed if other factors are positive (e.g., the program addresses a need, staff development activities are established, and so on - see Crandall et al).* In situations of small scale change, it is clear that with a small number of teachers involved it is preferable and feasible for most or all teachers to participate in major decisions.

*Note, I am referring to initial adoption decisions. Teachers must be involved in implementation activities and decisions.

7. District administrative support

Individual teachers and single schools can bring about change without the support of central administrators, but district or subdistrict wide change will not happen without district support. Although it has always been said that the superintendent (and the principal) are critical to educational change, it is only recently that we are beginning to understand more specifically what that means in practice. Most of the research cited in this section shows that the support of central administrators is critical for change in district practice (e.g., Emrick and Peterson, 1978:70-73). It also shows that general support or endorsement of a new program has very little influence on change in practice (for example, verbal support without implementation follow through). Teachers and others know enough now, if they didn't fifteen years ago, not to take change seriously unless central administrators demonstrate that it should be. (Berman, McLaughlin et al, 1978:84-95 contains an excellent description of how one new superintendent with a mandate from the board "transformed the organization".).

One of the more interesting analyses was carried out by Rosenblum and Louis' (1979:179). They investigated the relative effects on implementation of superintendent authority on the one hand, and classroom autonomy of the teacher on the other hand. They found that superintendent authority (number of decision areas influenced by the

superintendent) was positively associated with implementation, and classroom autonomy (number of classroom decisions that the teacher can make on his or her own) was negatively related to implementation. Rosenblum and Louis suggest that a degree of centralization is necessary for implementing comprehensive changes (across schools), and that strong norms of classroom autonomy in some districts may actually inhibit organizational and district wide changes.

The basic point, however, is that the chief executive officer and other key central administrators set the conditions for implementation to the extent that they show specific forms of support, and active knowledge and understanding of the realities of attempting to put a change into practice. To state it most baldly, the administrator affects the quality of implementation to the extent that he or she understands and helps to manage the set of factors and the processes described in this section.

8. Staff development and participation

Since the essence of educational change consists of learning new ways of thinking and doing, new skills, knowledge, attitudes, etc., it follows that staff development is one of the most important factors related to change in practice. Pre-implementation training by itself in which sessions, even intensive ones, are used to orient people to new programs does not seem to work (Berman and McLaughlin, 1978:27, Downey et al, 1975, Miles, 1978, Smith and Keith, 1971, etc.,etc.). One shot workshops prior to and even

during implementation are not very helpful (Rosenblum and Louis, 1979). Workshop trainers and program consultants are frequently ineffective. Consultants inside the district are unclear about their role and how to be effective consultants (Simms, 1978, Lippitt, 1979). Teachers say they learn best from other teachers, but research shows that they interact with each other very infrequently (Lortie, 1975). When teachers are trained as staff developers they can be very effective in working with other teachers (see Stallings, 1981). Teachers also say that they need direct outside help, if it is practical and concrete which they find to be the exception rather than the rule. Researchers report that concrete and skill specific training is effective, but "only for the short run" (McLaughlin and Marsh, 1978:76).

The dilemmas and inconsistencies in trying to understand why the "obvious" strategy of staff development fails more often than it succeeds are easy to resolve. Most staff development activities consist of one-shot or other brief encounters with little or no follow through. When follow up and technical support occurs, there is strong evidence that it is related to implementation outcomes. Louis and Rosenblum (1981) for example, found that external assistance was very important if it was characterized by intensity (frequent interaction), initiation as well as responsiveness, and involved a variety of external agents with different skills. Research on implementation has demonstrated beyond a shadow of a doubt that processes of <u>sustained interaction</u>

and staff development are crucial regardless of whether the change concerns federally funded change agent projects (Berman and McLaughlin, 1978), Louis and Rosenblum, 1981. Crandall et al, forthcoming), school district program change (Pratt and Melle, 1981, Berman, McLaughlin et al, 1978), the National Diffusion Network (Emrick et al, 1977), Organization Development Programs (Fullan, Miles and Taylor, 1980), staff development programs related to implementation (Hall and Loucks, 1978), change in rural school districts (Herriott and Gross, 1979), Rosenblum and Louis, 1979), the planning and implementation of new schools (Miles et al, 1978), head start and follow through programs (Hodges et al, 1980, Rhine (ed.) 1980, or technological change (Yin et al, 1977).

9. Time-line and Information Systems

Time perspective is one of the most neglected aspects of the implementation process. Ten years ago, Sarason (1971) recognized time as a critical factor:

> "In practice, the desire of the agents of change to get started - not only because of internal and external pressures but also because of the awareness, sometimes dim, that the road ahead will not be smooth - results in bypassing the different aspects of the time perspective problem, a bypass that might have no immediately adverse consequences, but can be counted on to produce delayed, and sometimes fatal difficulties." (Sarason, 1971:219)

Central decision makers know the complexities of the adoption process, practitioners know the complexities

of the implementation process. They live in two different subjective worlds. What appears rational to one side, is resistance to change to the other (see Cowden and Cohen, 1979).* Time is ignored, because it cannot be solved. There will never be enough of it. Avoiding difficult problems creates even more serious ones, and time is no exception. Unrealistic time lines add to the burdens of implementation - materials fail to arrive on schedule, orientation and training is neglected or carried out perfunctorily, communication is hurried, and frequently overlooked or misinterpreted, people become overloaded with the requirements of new programs and carrying on as usual (see Charters and Pellegrin, 1973, Yin et al, 1977). Disillusionment, burn out, cynicism, apathy, etc. come to characterize many people's orientation to all changes that come along. Open ended time-lines are also problematic because they create ambiguity about what is expected and when, and a lack of clarity about what constitutes progress.

Whatever time-line is used, one of the major dilemmas faced is what kind of information to collect, when, and how best to use it. This can range from highly elaborate

*This helps to explain why each side feels misunderstood by the other, and why people are frequently surprised by how others completely misinterpret the best of their intentions, and literally do not hear what they are saying.

accountability schemes (Wise, 1980) to having no formal information system at all. Information can be gathered on the extent and problems of implementation, and/or on student achievement and other desired outcomes. The issues involved in setting up a district wide information system are too complicated to delve into at this point except for three observations. First, there is no evidence that information on student achievement by itself results in improved implementation. Student learning data provides little insight into the specific problems of implementation (such as teaching behavior, effective staff development activities, etc.). Second, information on implementation concerns can be very effective in facilitating change provided that it is linked to a system for acting on it. Pratt and Melle, 1981, describe how this works in one district. The research in general shows that most school districts do not have evaluation systems linked to instructional improvement procedures (Bank, 1981, Lyon et al. 1978). Third, it is at the school and classroom levels where information counts. As I will indicate later an emphasis on collecting and using information about student learning and other implementation problems has been found to be strongly related to school improvement (Edmonds, 1979).

10. Community Characteristics

It is very difficult to generalize about the role of communities in relation to implementation. Corwin (1973) found that community-school support was correlated positively with innovativeness. Smith and Keith (1971) and Gold and Miles (1981) describe the painstaking sagas of what happens when middle class communities do not like the innovations they see in their schools. Demographic changes often put increasing pressure on schools to adopt, if not implement, new policies (Berman and McLaughlin, 1979). For example, a case study of the Toronto school system shows how the school board was central to the development of new multicultural policies and programs which were not necessarily welcomed by many schools (see Toronto School Board, 1976). Rosenblum and Louis (1979:111) found that "the degree to which environmental changes external to the school were impinging on it to change" was one of four readiness factors related to subsequent implementation. Major conflicts, however, sometimes incapacitate districts in bringing about actual change (in a sense, certain adoption decisions have to be settled before energy can be turned to implementation). Whatever the case, as Miles 1980 asserts, attending to political stabilization in relation to the community is one of the primary tasks of planning and implementing new programs. In contemplating

or introducing innovations, districts frequently ignore the community (see Gold and Miles, 1981, Smith and Keith, 1971).

I would tentatively suggest: that most school communities are usually not directly involved in implementation; they can become aroused against certain innovations; neither highly stable or highly turbulent school communities constitute effective environments for implementation.* The role of individual parents in instruction (home tutors, teacher aides) rather than community groups may provide one of the most powerful leverages to more effective implementation (Fantini, 1980), Armor et al, 1976, and Fullan, forthcoming, chapter 12).

C. School Level Factors**

The meaning of the phrase "the school is the unit of change" will become evident in this section. Three main factors summarize the influence of the school on implementation - the role of the principal, peer relationships, teacher orientations. Taken together they constitute the character and climate of the school as an organization.

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*There is no assumption that implementation is "a good thing". Turbulent communities need to resolve more basic problems regarding goals, purposes, and needed adoptions.

**I do not separate elementary and secondary schools in this section. There is not enough research on their differences in relation to effective change to allow for clear conclusions. The generalizations I do describe have been found in schools at all levels (elementary, junior high and secondary).

11. The Role of the Principal

All major research on innovation shows that the principal strongly influences the likelihood of change, but it also indicates that most principals do not play instructional leadership roles. Berman and McLaughlin (1977), provide some detail. They found that "projects having the active support of the principal were the most likely to fare well" (p.124, their emphasis). Principals' actions serve to legitimate whether a change is to be taken seriously (and not all changes are) and to support teachers (both psychologically and resource wise). Berman and McLaughlin (1978:128) note that one of the best indicators of active involvement is whether the principal attends workshop training sessions. If we recall the earlier dimensions of change (beliefs, resources, teaching behavior), we might speculate that unless the principal gains some understanding of these dimensions (not necessarily as an expert or an instructional leader) he or she will not be able to understand teachers' concerns; that is, will not be able to provide support for implementation. Such understanding requires interaction.

There is an abundance of other evidence which describes how and why the principal is necessary for effective implementation. To take one example, Emrick and Peterson's (1978) synthesis of five major projects (one of which was the Rand project, FPSEC) identifies administrative support as one of five factors common across all projects:

> "...utilization rarely occurred when building or district administrative components were indifferent and utilization was virtually impossible in the presence of administrative opposition". (Emrick and Peterson, 1978:71).

While the principal can have a major impact on implementation there is also considerable research which indicates that he or she frequently does not play an active role. Berman and McLaughlin (1978:131) report that one-third of the teachers thought that their principal functioned primarily as an administrator. Teachers rated these principals as ineffective and uninvolved in change. Similar findings come from studies of the use of provincial curriculum guidelines in Canada which indicate that at best only about one-half of school principals provide active instructional leadership. (see Leithwood, Downey et al, 1975, Simms, 1978). The subjective world of the principal is such that many of them suffer from the same problem in "implementing a new role as facilitator of change" as do teachers in implementing new teaching roles. What the principal should do specifically to manage change at the school level is a complex affair for which the principal has little preparation. The psychological and sociological problems of change which confront the principal are at least as great as those experienced by teachers. (see Leithwood and Montgomery, forthcoming and Fullan, 1982, Chapter 8).

12. Teacher-teacher relationships

The theory of change which is evolving clearly points to the importance of peer relationships in the school. Change involves resocialization. Interaction is the primary basis for social learning. New meanings, new behavior, skills, etc., depend significantly on whether teachers are working as isolated individuals (Lortie, 1975, Sarason, 1971) or exchanging ideas, support, and positive feelings about their work (Little, 1981; Rutter et al, 1978). The research I have been reviewing provides direct confirmation that the quality of working relationships among teachers is strongly related to implementation (e.g., Berman and McLaughlin, 1978:119-120; Rosenblum and Louis, 1979; Miles et al, 1978). Collegiality, open communication, trust, support and help, interaction, and morale are all closely related. How this comes about is another question, but I have already suggested that the principal strongly influences the climate of the school. Berman and McLaughlin (1978), Galanter (1978) and others report strong correlations between principal support and peer relationships among teachers.

13. Teacher characteristics and orientations

Research on teacher characteristics and effective change is inconsistent in its findings. Level of education (e.g., possession of a master's degree) and years of teaching experience are two variables frequently measured

in research studies. The results vary, and it is not difficult to see why given the other factors in table 1.

It is not level of education or years of experience that matter so much as under what district and school conditions do teachers spend their time. Depending on the conditions, innovators and hard core resisters are found among all ages, and levels of education.

There is one teacher trait related to successful implementation and student learning which comes through strongly: teacher sense of efficacy. The Rand change agent study found a strong relationship between teacher sense of efficacy* and positive impact of change on various measures of success including percent of goals achieved, reports of improved student performance, and teacher change (Berman and McLaughlin, 1977:136).

It is more difficult to explain how teachers get a sense of efficacy, but it is encouraging to observe that it is not idosyncratic. In some schools, there are much higher proportions of staff who possess this orientation than in others, even when community and student characteristics are similar. This suggests that efficacy

*Defined as "a belief on the part of the teacher that he or she could help even the most difficult or unmotivated students".

is more of an organizational feature of these schools which come to have a school-wide emphasis and expectation that they can improve student learning - and they do (Edmonds, 1979; Rutter et al, 1979).

No words could sum up Section C more accurately than those of Judith Little, based on her study of work practices in six urban schools:

> "School improvement is most surely and thoroughly achieved when:
>
> Teachers engage in frequent, continuous and increasingly concrete and precise talk about teaching practice (as distinct from teacher characteristics and failings, the social lives of teachers, the foibles and failures of students and their families, and the unfortunate demands of society on the school). By such talk, teachers build up a shared language adequate to the complexity of teaching, capable of distinguishing one practice and its virtue from another...
> Teachers and administrators frequently observe each other teaching, and provide each other with useful (if potentially frightening) evaluations of their teaching. Only such observation and feedback can provide shared referents for the shared language of teaching, and both demand and provide the precision and concreteness which makes the talk about teaching useful.
> Teachers and administrators plan, design, research, evaluate and prepare teaching materials together. The most prescient observations remain academic ("just theory") without the machinery to act on them. By joint work on materials, teachers and administrators share the considerable burden of development required by long-term improvement, confirm their emerging understanding of their approach, and make rising standards for their work attainable by them and by their students.
> Teachers and administrators teach each other the practice of teaching (Little, 1981:12-13, her emphases).

Only two of the six schools in Little's study evidenced a high percentage of these practices, but conditions for

effective implementation on the part of individual teachers and administrators are clear.

D. External Factors

The last set of factors are considered under the general label of assistance external to the school district. Governments are by far the major direct and indirect sources of external assistance to school systems. Even with recent major cutbacks in federal expenditures the combined federal and state roles provide the margin required for implementation support in many school districts. As one might predict, whether it is used for better implementation depends on the characteristics of local systems, that is, it depends on those factors just described in categories B and C. Technical assistance for implementation (materials, consultancy, staff development, etc.) is frequently available in federal or state sponsored innovative programs. This too, involves a complicated set of issues. The amount of external assistance per se is unrelated to implementation, but we are learning more about the conditions under which external help is needed and effective (see Louis and Rosenblum, 1981; Louis, 1980, Crandall et al forthcoming). The simplest observation at this juncture is that outside assistance or stimulation can influence implementation very greatly provided that it is integrated with the factors at the local level described above. In particular, program assistance (materials,

products) combined with certain types of technical assistance (external agents) is related to implementation (Louis and Rosenblum).

This completes an overview of factors affecting implementation. As Hall and Loucks (1977) observe, implementation is a process not an event. The factors described operate as a system of interacting variables having different values, combinations and contingencies in any given situation. It is extremely difficult to understand, let alone manage, the details of implementation in specific settings.

Implementation Outcomes

Attempts at change have different kinds of outcomes. I have alluded to the most obvious immediate one as "change in practice", or more specifically changes in the use of new resources, new skills and behaviors, and alteration of beliefs. These changes of course, are presumably means to other outcomes such as increased student achievement. It is only very recently that we have begun to conceptualize and attempt to measure implementation outcomes more comprehensively. The most helpful examination of the area of outcomes of change efforts is contained in the DESSI study (Crandall et al, forthcoming). Five different kinds of outcomes are identified and measured roughly in order from intermediate to more long term effects.

1. Degree of Implementation
2. Attitude toward Innovation

3. Impact (a) students' benefits
(b) teachers' benefits
(c) organizational benefits

4. Continuation or Institutionalization

5. Attitude toward School Improvement

Degree of implementation assesses the degree of actual change on the part of teachers (i.e., it is similar to my definition of "change in practice"). Attitude toward the innovation concerns perceptions of the strengths and weaknesses of the change. Impact involves an assessment of student learning, teacher benefits (e.g., professional development), and organizational change (e.g., increased interaction, teaming). Continuation involves such matters as incorporation in the budget, staffing and extent of durability of the change. Attitude toward school improvement is a kind of meta variable related to whether the experience with the change effort increases or decreases people's attitude toward engaging in new school improvement programs - in brief, whether the experience has led people to conclude that it is worthwhile to try and implement program changes.

The RDU study also makes a major contribution to the study of outcomes of adopted programs. Six different types of outcomes were identified: degree of organizational change, scope of implementation, incorporation of the product, incorporation of a problem-solving process, problem resolution, and personal impacts (Louis and Rosenblum, 1981:149).

Despite these important starts there are at least two major problems which are intrinsically complicated. The first concerns

the difficulty of sorting out the causal order among the different types of outcomes. Some are obvious such as: change in practice hypothetically leads to increased student benefits. Others are much more difficult to unravel such as the role of attitudes toward the change. The second and more fundamental problem is that the DESSI and RDU projects examined concrete innovations or products. Many other change initiatives are more open ended and difficult if not impossible to define in measurable terms (see Farrar et al, 1980, Majone and Wildavsky, 1978, Fullan 1980). Thus, the assessment of outcomes is much more problematic if one takes a more open ended (adaptive or evolutionary) view of change than if one examines innovations from a fidelity or programmatic perspective (see also Berman, 1980).

A final note of caution which is implicit in the notion of the need to assess a number of different types of outcomes. Implementation per se is not necessarily a good thing. Change in practice may or may not lead to the desired outcomes. Certain outcomes may come at the expense of others. The negative consequences may outweigh the positive ones. The innovation or change may not be a good one in relation to some people's goals, or in terms of quality as was noted in figure one earlier.

III IMPLICATIONS

We have progressed from general theories of failure toward more specific understanding of how educational change works. Research during the past five years is increasingly more detailed and clear in its explanations of both success and failure. Empirically, there are examples of success (e.g., Crandall et al, forthcoming, Little, 1981, Louis and Rosenblum, 1981, Stallings, 1981). They show that bringing about change in practice is a careful but nor overwhelming business. Small amounts of time and other resources used in a focused, persistent manner over a period of months can generate important benefits. Successful change processes, once described are easily understood because they are based on what seems to be "organized common sense." (which is not to say that it is easy to harness common sense in difficult situations.)

It is also encouraging to note that other bodies of research are independently confirming many of the findings. Research on school effects (Edmonds, 1979, Rutter et al, 1979, D'Amico, 1980), on evaluation utilization (Bank, 1981), Kennedy et al, 1980, Lyon et al, 1978, and on in-service education/staff development (Joyce and Showers, 1981), Stallings, 1981, Little, 1981) report very similar results. While the convergence is not perfect, the essential similarities serve as a kind of external validation that we are on to something worthwhile.

There are at least four broad issues requiring more work to which I will refer briefly here as (1) theories of contingencies, (2) theories of changing, (3) practical implications, and (4) question of the impact of change. Relative tp the importance of contingency thinking, there are numerous viables operating in any given situation. I have described factors of change in this paper at a middle range rather than

a situationally specific range.

Questions of contingency refer to the combinations and interactive effects which occur in particular settings at particular times. Even at the level of the 14 factors discussed in this paper there are numerous interactions and variations possible. When one moves to the level of specific events and to large numbers of social and personal variables affecting change processes and outcomes, the possibilities are countless. Yet we need theories and explanations closer to the action which do begin to map out contingencies and their consequences (the 12 case studies and cross site analysis in the DESSI project is one impressive example of what this entails and what benefits (more powerful, detailed explanations) accrue -- Crandall et al, forthcoming).

Better comprehension of contingencies forms an important foundation for the second issue which should be addressed, namely, the need for theories of changing -- how to move from A to B.* Case studies of successful efforts, of course, do not contain direct lessions for how to obtain success in other situations. The transfer of knowledge about change raises a whole new set of issues. Some situations may not be amenable to any change attempts. In other situations, there are many different ways and places where one could start, and these will vary. Is it better to put more emphasis on program development, leadership training staff development, or climate change, or to do nothing, when one has to make

*To state the matter differently, "contingency" refers to the need for more detailed explanations, while "changing" refers to strategies for influencing situations in desired directions.

choices about where to place resources. In sum, contingency thinking combined with strategies for changing (which variables in given situations are most important and most alterable) represents a critical line of future inquiry, if we are to build on the considerable progress made in the past five years.

The third issue -- practical implications -- can be developed only to a certain extent in this paper. At one level the fourteen factors can serve as a checklist for approaching change more thoroughly. They offer in a direct way a set of guidelines for those aspects of change which should be planned for, discussed and double checked throughout the process of change. Note also, the message is that the fourteen factors must be viewed in combination, not in isolation from each other.

At an individual role level, however, we need more customized analysis and specific suggestions. How to cope with change will be a very different proposition if one is a teacher versus a principal vs. a parent vs. a district or state policy maker; and whether one is interested in initiating change or forced to respond to programs initiated by others.*

The fourth issue is the big one. Does educational change, even when implemented make a difference in the short, intermediate and long run on student learning and life chances, on teacher satisfaction and development, on the school as an organization? I assume we will never have satisfactory answers to these questions, but the recent

*In a recent book I have written separate chapters for each of the main roles including analyses of the situation in each role, and corresponding guidelines for action. (Fullan, 1982).

work on conceptualizing and measuring a variety of outcomes should stimulate us to continue to struggle with these questions, and to move toward greater enlightment. In the meantime, with only about twelve years of intensive research on problems of implementation behind us, we haven't done badly when you think about it.

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